ABSTRACT OF THE DISCLOSURE

The present invention provides a device for in-situ measurement and recording of various environmental parameters in a semiconductor fabrication process. The device comprises sensors for detecting the parameters and converting them to sensor outputs; and a data logger coupled to the sensors for receiving the sensor outputs and logging them in a file. The device may also comprise an analog to digital converter to convert the sensor outputs to digital data and a communication module to communicate the digital data with other devices. When applied to reticles used in a semiconductor fabrication process comprising a plurality of stages, the device may be used to monitor electrostatic field and electrostatic discharge activities on and around the reticle, convert the monitored parameters into data, and log the data along with a timestamp and an identification of each individual stage. Logged data can be retrieved and analyzed to determine the time and location of detrimental activities such as electrostatic discharge on reticles.